This behaviour must be having some adaptive significance in nature under certain conditions.

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References

Fraenkel, G. (1932): Die Wanderungen der Insecten. *Ergebnisse der Biologie*, **6**: 1-238.

——— & Gunn, D. L. (1961): The Orientation of Animals. Dover Publications, Inc., New York.

Kennedy, J. S. (1939): The visual orientation of flying mosquitoes in still and in moving air. *Proc. Zool. Soc. Lond.* A. **109**: 221-242.

Wheeler, W. M. (1899): Anemotropism and other tropism in insects. *Arch. EntwMech. Org.* **8**: 373-381.

20. THE RED PUMPKIN BEETLE *RAPHIDOPALPA FOVEICOLLIS* (LUCAS), AS A PEST OF THE JAPANESE MINT

The Red Pumpkin Beetle, *Raphidopalpa foveicollis* (Lucas), is a serious pest of cucurbits and is very widely distributed all over India. Besides cucurbits, it has been reported to damage the leaves of plants such as *Lathyrus odoratus* L., *Pisum sativum* L., *Medicago sativa* L., *Oryza sativa* L., *Zea mays* L., *Cyamopsis psoraloides* DC., *Trifolium resupinatum* L., french beans, *Phaseolus vulgaris* Linn, etc. The beetle is reported here for the first time as causing damage to mint, *Mentha arvensis* L. subsp. *haplocaly* Briq. var. *piperascens* Malinvaud. The menthol in the leaves of this new host plant gives them a strong aroma and bitter taste but does not deter the pest.

The Japanese mint, an important exotic aromatic plant, was initially introduced on the farm of the Northern Zonal Centre of the Central Indian Medicinal Plants Organisation, Haldwani (Nainital) and is now grown as a cash crop in about three thousand acres in the Tarai tract of Uttar Pradesh. Adult red pumpkin beetles, *Raphidopalpa foveicollis* (Lucas) (Coleoptera: Chrysomelidae) were observed in groups of three to six on leaves of Japanese mint in March-April 1967 and 1968 at the farm of CIMPO, Haldwani, situated on Bareilly-Nainital Road about a mile north of Pantnagar Railway Station. They fed on the underside of the leaves and caused fairly severe damage. Initially the damage is mainly to the palisade tissue in between the veins, causing transparent patches on the infested leaves which are progressively holed. Unless large number of such patches appear, the pest escapes detection while feeding on the undersurface of the leaf and continues to damage it. Besides the leaves, young growing apical and auxiliary buds are eaten. This, however,

retards growth only temporarily. In severely infested plots, the loss of crop ranges from 15 to 20 per cent.

Even though the beetles were observed feeding on the foliage and also pairing on the plants; it is not yet known as to how far they complete their development on this new host. However, the ease with which they feed on this plant suggest, in addition to the pairing recorded on the host, that the pest might be able to complete its life cycle on the Japanese mint itself. The extent of damage caused afford sufficient justification to classify it as a serious pest.

Control Measures: Spraying 0.02 per cent endrin at the rate of about 1,000 litres per ha. in the early hours of the day effectively control the pest. In this case, the crop should not be harvested within three weeks of the date of spraying. Dusting 5 per cent malathion at the rate of 2 kg. per ha. or spraying 0.1 per cent malathion at the rate of about 1,000 litres per ha. is also effective in reducing infestation.

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